

an agent tracker to automatically retrieve information of interest to the user when the user is logged on to the Internet. However, the search itself is not attributed to any particular project name or file during the research. No features are provided to enable the user to re-access the saved research based on a key word search of such saved projects.

Another firm, WebKeys Incorporated of California, provides a method, known as "PROWLER" (information available at <http://www.webkeys.com/aboutwk.htm>) that requires that individual users log on to the Internet using an individual user name and password. Access to certain categories of websites (i.e., "All age", "Under 14", "Teenagers", "Adult content", and "Explicit violence/sexual content") is granted or denied based on privileges that are determined by a system administrator. Further, a navigation history, associated with the user, is saved for administrative censoring purposes.

Other web resources such as "WESTLAW" and "LEXIS-NEXIS" provide Internet portals or web pages that require login by ID and password (i.e., subscriber sites) in order to gain access. Further, prior to beginning research in these secure subscriber sites, a client matter number may be input, which, optionally, is checked against a database of the user's client matter numbers, to confirm accuracy. However, because these are not browser-based, the user may leave these subscriber sites and do other task/research on the Internet that is not attributed to the client matter number. Thus, little improvement over prior art systems or methods of performing Internet research is offered.

Thus, no tools are available on the market that aid in directing or managing a user's Internet research such that one is able to concentrate on one project at a time. The lack of such tools is consistent with the name given the process of performing research on the World Wide Web, namely "surfing" or "browsing", terms which imply a rather undirected and undisciplined approach to doing research and the lack of a predetermined business goal. Consequently, as has been the experience with many businesses that are using the web for project research, much time is wasted as the users, distracted by the attention-generating features, spend employer or client time researching subjects of personal interest or of interest to another project. Such distracting features thus make focused research using the prior art browsing methods almost impossible.

Further, no secure and convenient means has been provided which allows access to documents posted on a publicly accessible server or intranet which does not require the manual input a decryption key. Further no means is available whereby, solely information input at the time of accessing the Internet or intranet, optionally together with an IP address, decrypts such information.

Still, further, no performance measures have been developed to enable Internet searchers to access their performance with respect to their level of focus.

Therefore, what is needed is a method and system which provides a graphical interface with which a user may interact which hinders random movement of a download request on the Internet from one server to another server, measures user performance, and helps ensure directed movement of a download request, relevant to a given project goal, thus better allocating human resources, minimizing online time and facilitating and promoting concentrated research directed to one particular project at a time. In particular, a browsing method is needed which minimizes the number of unnecessary or irrelevant research sessions, these sessions often representing unproductive diversions from project or

FIG. 12 is a flow chart of an off-line URL organization step of the invention.

FIG. 13 is a Graphical User Interface ("GUI") of the invention.

FIG. 14A is a flow chart of a submethod of the invention which executes upon activation of a link.

FIG. 14B is a flow chart of an alternate submethod to that shown in FIG. 14A.

FIG. 15 is a secondary window of the invention.

FIG. 16 is a UML class diagram of a system administration module of the invention

FIG. 17 is a flow diagram of a submethod of the invention.

FIG. 18 is a flow diagram of a logout submethod of the invention.

FIG. 19 is a diagram of the layout of a GUI of the invention which enables a user to sequentially follow a navigation history created by another.

FIG. 20 is a flowchart of a submethod of the invention for activating forward and back icons which navigate sequentially between content saved under a project name.

FIG. 21 is a flowchart of a submethod of the invention operating on a server that scans and updates the bookmarks and other content on a browser when the server is accessed.

Detailed Description of the Preferred Embodiment

Referring to FIG. 1 which is a block diagram of a typical system 20 for practicing the various embodiments of the present invention, the client browsing method 60 of the present invention is encoded on a computer-readable medium and manages access by users using a computer system 20 to a network of servers 54 and 54' (shown in FIG. 2) such as the Internet. Such a computer system 20 typically includes a computer 22, a display device 24, an input device 26 such as a keyboard, a primary storage device 30, a secondary storage device 32 and a plurality of resources 23. Each resource 23 is operatively coupled to at least one of the computers 22. Resources 23 include, but are not limited to, printers, databases, special-purpose servers, security devices, modems, etc.

After loading of software encoded with the method 60 of the invention, the display device 24 displays a graphical user interface ("GUI") 34 for facilitating the display of text and graphics for the user. Display devices 24 include printers and computer display screens such as a CRT, LED displays, and LCDs. Input devices 26 are numerous and include keyboards and pointing devices such as a mouse 27 having a left mouse button 28 and a right mouse button 29, a trackball, lightpens, thumbwheels, digitizing tablets, microphones using voice recognition software, and touch screens and pads.

The computer 22 includes a CPU 36 as well as other components with which all who are skilled in the art are familiar. For a detailed discussion of these components and their interaction, see U.S. Pat. No. 5,787,254, the content of which is incorporated by reference. The secondary storage 32 supports the browsing method 60, preferably HTTP-compliant, as well as a number of Internet access tools. The secondary storage 32 may also support other Internet services including mail transfer protocol (SMTP), e-mail, file transfer protocol ("FTP"), network transfer protocol ("NNTP") or "usenet" and remote terminal access (Telnet). The CPU 36 fetches computer instructions from primary storage 30 through an interface 40 such as an input/output subsystem connected to a bus 42. A relational database 53a in which data and

20 at runtime (e.g., a workstation), it can be appreciated by one skilled in the art that they may be implemented in a variety of hardware devices, either programmed or dedicated. Client 52 and server 54 communicate using the functionality provided by an HTTP connection 72. The World Wide Web includes all the servers adhering to this standard which are accessible to clients via Uniform Resource Locators ("URLs"). Active within the client 52 is the browser method 60 of the present invention, which establishes the connections with the server 54 and presents information to the user. Server 54 executes the corresponding server software which presents information to the client in the form of HTTP server responses 62. The HTTP responses 62 correspond with web pages represented using HTML or other data which is generated by the server. A web page contains data and a layout language which describes how data should be displayed. The layout language used within each web page is predominantly HTML, but may also include "JAVA", "JAVASCRIPT", VRML, or any other language which supports hypertext functionality 64. The user views a web page (e.g., 152 of FIG. 13) from the World Wide Web using the browsing method 60 of the present invention. The browsing method 60 accepts the data and the layout language and in response, produces a graphical image containing hypertext links along with text, graphics, and various other types of multimedia. The tools needed to implement the browsing method 60 are known in the prior art (e.g., see background section). In addition to the HTML functionality 64 provided by server 54 (i.e., display and retrieval of certain textual and other data based upon hypertext views and selection of items), a Common Gateway Interface ("CGI") 66 is provided which allows the client program to direct server 54 to commence execution of a specified program contained within server 54. This may include a search engine which scans received information in the server for presentation to the user controlling the client. Using this interface and the HTTP responses 62, the server 54 may notify the client 52 of the results of that execution upon completion of the program steps.

Further, because HTTP is a stateless protocol, every user request 50 for information from the server 54 is treated independently, with the server having no memory of previous connections. This statelessness results in the rapid and efficient transmission of hypertext documents (e.g., the web page 152 of FIG. 13).

There are four states to a HTTP connection 72. First, the connection 72 is opened. This means that contact is made between the client computer 52 and server 54 at the Internet address and port number specified by the URL. Second, the client 52 sends a message to the server 54, requesting service. This user request 50 is made up of HTTP request headers that define the "method" requested for the transaction and provide information about the capabilities of the client 52, followed by the sending of the data to the server 54. Typical HTTP methods are GET, for getting an object from a server 54, or POST, for posting data to an object on the server. Third, the server 54 sends a response to the client 52. This consists of response headers describing the state of the transaction, followed by the actual data. Fourth, the connection 72 is closed. This procedure means that a connection 72 can download only a single document or process a single transaction while the stateless nature of the transaction means that each connection knows nothing about the previous connection.

keywords with each URL. The Project field 238 associates a project description with a project name 100. A ProjectBookmark field 250 associates URLs with project names 100.

Referring now to FIG. 6, a flow chart of the browsing method 60 of the present invention is shown. The method 60 is implementable on the Intranet 25 or a standalone PC 22. Where, in an intranet context, «other users» refers to either other users of the standalone PC 22 or other users of the intranet who use the method for collaborative browsing, and the term «network administrator» is interchangeable herein with the term «guardian» (a supervisor such as a manager or a parent in the event that the system is used at least in part for censorship purposes), as the case may be.

The browsing method 60 is encoded on a computer-readable medium. The method 60 is implemented in software which instructs a microprocessor to manage system components, inputs and outputs in a manner which controls access to the Internet. The method 60 includes an access control matrix having at least the parameter of project name 100 which must be input in order for access to the Internet to be permitted. When a data string associated with this parameter is received, the data string is classified and filtered against the access control matrix. If the data string includes a string identified as a project name 100, access is permitted; otherwise, access is limited (e.g., only a limited number of preapproved web pages may be accessed, such as a page providing instructions on how to use the method) or denied altogether. It is also beneficial to include as required parameters a user name 90 and a password 92, in order to be able to measure and compare user performance in Internet research.

In a first step 80, by clicking on an icon for example on the user's desktop, the browsing method 60, operating on the system 20 of the invention, is loaded into the working directory of the computer 22.

In a second step 82, the method then presents an input window (similar to that shown in FIG. 7) in which the user inputs an individual user name 90 and an individual user password 92 (if the system is configured for multi-user access, this may be omitted if only one user is permitted to access the PC). If this information is correctly input, the user then logged on to a PC-resident HTML page. This page includes links to subpages and to other pages on the Internet, preferably on a subject related to the target market of the software (for example, legal links would be provided if the software is customized for the legal market).

In a third step 84, upon clicking on a drop-down menu item entitled "begin new project", the method 60, using the display device 24 of the computer 22, then presents the user with a selectable presentation of frequently used bookmarks or URLs. Optionally, entire contents of web pages may be saved in memory, to aid in off-line research. If another drop-down menu item, entitled "Begin Session" is selected, the method 60 goes to step 86.

Referring now to FIG. 7, optionally, the method 60 presents a single input window 101 in which the individual user name 90, the individual user password 92, the project name 100, and, optionally, subproject name 103 (e.g., for project name "TELEPHONE", the subproject name might be "LONG DISTANCE PROVIDERS") are input. If all required fields are completed correctly, then the method jumps to step 102. Further, finding aids such as a browse project name button 105 may be added, should the user not know the name. Clicking on the "browse project name" button 105 calls up a listing of

limitations which apply to a given user or project: only he may change these restrictions, as directed by company management for example). If there are no applicable restrictions indicated in the authorization table, the user is permitted to continue. If there are, the user receives an error message informing him that he is not authorized, is given the opportunity to end the session, begin another project, or browse project names 100. Such a means of limiting access to research results will be particularly important in a litigation firm context, where a Chinese wall has been set up between one litigator and another, due to a potential conflict of interest and in the context of posting and accessing confidential documents on a publicly available server 54 (described in more detail below). If there are no applicable restrictions indicated in the authorization table, the user is permitted to continue. Further, users themselves may restrict access (in so far as the system administrator permits them to do so by for example, responding to an e-mail request to modify the user authorization table) to project names which they themselves created.

Further, the user (or the system administrator) can limit access to such projects (over which they have control) to categories/groups of other users, such as management, staff, secretarial, attorneys, paralegals, etc. For example, the user accomplishes this by checking off a dialog box when the user logs off the current project name 100 as shown in FIG. 9. A log off window (not shown) is presented to the user when the user activates a log off feature (such as a pull-down menu, an icon, or answering appropriately to a dialog window presented, asking if the user wishes to continue or terminate the current research project). An optional window 157 is then presented, which includes, for example, the text "permit access to the following categories: ☐ all: ☐ administration, ☐ lawyers, ☐ staff". Checking off any box will limit access to the extent of the user category. In other words, the user will generally have the authority to limit access to anyone in the same category, or of a category which plays a support role in relation to the user. However, certain categories of users ("privileged users") will always have access to research results, such as the system administrator or the responsible attorney in charge of a particular client, or the employee's direct supervisor. When a privileged user seeks access to a particular research result associated with the project name 100, the method 60 accesses the database 53 (described in detail above in connection with FIG. 5) and checks the user authorization table to determine whether the privileged user is the supervisor of the user who performed the research, or whether he is categorized in a privileged level with respect to the user whose research results are sought. If so, the user is granted access, unless otherwise denied by the system administrator (such as in the case of a Chinese wall).

Referring now to Table 2 of FIG. 10, in a seventh step 104, if a previously saved URL Listing, Navigation History or Research Summary exists in association with the project name 100, the user is presented with the associated URL Listing, including all URLs saved in association with the project name 100, or SessionMarks created in a research summary/navigation history associated with the project name (again, see Table 2 and FIG. 5). This summary shown in FIG. 10 may be recalled and brought to top of the user's screen at any time during the research session by simply clicking on, for example, a special icon on the field 154 of the GUI 34 (shown in FIG. 13). In an eighth step 106, upon the input of a user command ordering the downloading of information located on the Internet (such as by clicking on a hypertext link), the log on to the Internet is made (wherein the user name and password for access to the ISP is input), an HTTP connection 72 to a desired server 54 is established, a time T1 is read from the

any links which are marked for deletion are not printed, thus permitting the placement of the summary in a client's file without including any potentially embarrassing or unprofessional information thereon (a "marked for deletion" notation on the print out makes sense because the deletion of sites which are not of interest to a client is an administrative task). Further, the system administrator (or guardian) may then delete these marked records, and adjust the user authorization table appropriately (e.g., if the system administrator finds that a user has marked for deletion a series of sites that fit a particular category to which the system administrator may block access in the user authorization table, he may so adjust the user authorization table in order to prevent this content from being accessible to the user.

In the twelfth step 120, the research summary of the session (Table 2, Section 3) is saved in the database 53 for common access and for presentation upon the user's or another privileged user's next login under that project name 100. The research summary includes the individual user name 90, project name 100 and navigation path or history 124 (shown in FIG. 10) of the last research session.

In the thirteenth step 122, the method 60 presents the user with the opportunity to print out the research summary, project navigation history, and/or associated bookmarks, for placing in an associated file for later reference. The printout may simply be that of Table 2 of FIG. 10. For example, the user is presented with an input screen which queries the user as to whether he would like the individual user name 90, project name 100 and navigation history 124 printed out. If the user answers affirmatively, the summary is submitted to a printing cache of a connected printer for printing.

In a fourteenth step 126, the user is queried as to whether he would like to begin another research session and if so, the method 60 returns to step three 84 above, the input window 101 of FIG. 7 (wherein the user name 90 and password 92 are automatically input into the windows, or, if the TBMs were created during the research session, the method returns to step 86 above and the TBM listing is presented, carried over to the next research session. If not, the connection closes, the user is asked whether he wishes to save any TBMs created during the research session. If the user responds in the negative, any unsaved TBMs are automatically deleted and the method 60 ends. If the user responds in the positive, the TBMs are saved in association with the project name 100 for presentation, in a selectable form in chronological order with other TBM listings, next time that step 94 is executed.

In an alternative embodiment to the method 60, the second step 82 and third step 84 may be reversed. Further, referring again to FIG. 6, the third step 84 of presenting frequently used URLs is performed in the following manner. In a first substep 130 of the fourth step 86, the method 60 provides a pull-down menu or a dialog window 137 (such as that shown in FIG. 13), which permits the user to perform a key word search of all descriptions of project names 100 previously searched by others, including any associated or unassociated (i.e., all) bookmarks (by name and by associated description of the bookmark). In a second substep 132, after input is received from the user, any descriptions, project or bookmark names matching the search criteria are presented to the user in a selectable format such as a URL and description listing in the form of a research summary such as that shown in FIG. 10.

Further, to economize display screen space and computer memory, the research summary may include shortcuts to folders of links common to a particular type of research, thus not requiring duplication in each related project research summary and providing easy access to frequently referenced